

# EAC Protocol Vehicle Travel Focused Mobile Source Reduction Measures

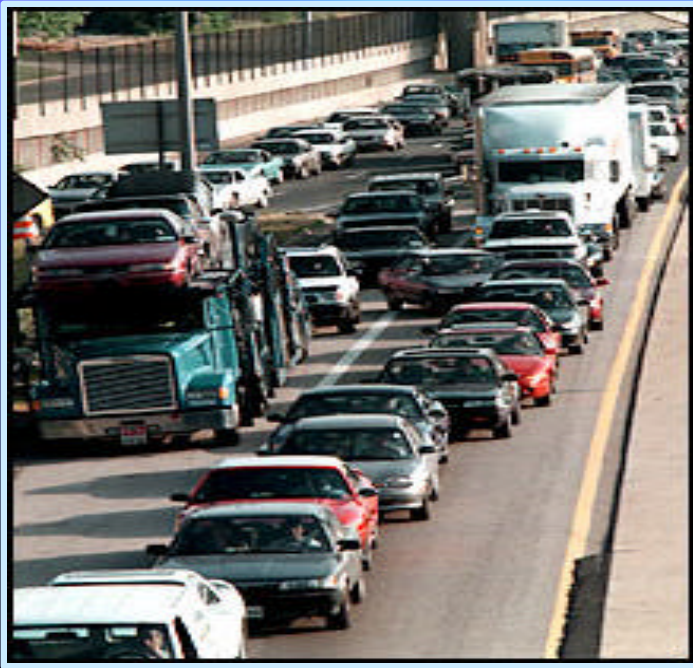
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Nashville, Tennessee

# Mobile Emissions

CO Emissions: 56% from Vehicles

Nox Emissions: 30% from Vehicles

PM10: 44% from Road Dust



## Reduction Strategies

Vehicle Travel focused

Fuel Economy focused

Fuel focused

# Vehicle Travel Focused TCMs

TCMs that modify driving behavior and limit emissions resulting from traffic congestion.

Mandatory-----Voluntary

Regulation

Economic

Educational

Market Based



# Clean Air Action Plan

Local proactive approach to attainment to be:

## (1) Implemented by 2005

Which Transportation Control Measures can be *quickly* mobilized?

## (2) Reach attainment by 2007

Which Transportation Control Measures are most *effective* at reducing mobile source emissions?

# Mobile Source

Travel Related

Trips eliminated

Reduction of miles traveled.

Trip changes/work related.

Trip changes/non-work related

# TCMs in the 1990 Clean Air Act

1. Improved public transit
2. HOV and bus lanes
3. Bicycle use incentives in both private and public areas
4. Parking facilities for HOV or transit service
5. Programs providing for all forms of high-occupancy and shared ride services
6. Programs for new construction or major reconstructions of paths, tracks, or areas solely for the use by pedestrian or non-motorized means of transportation when economically feasible; and
7. Employer based transportation management plans, including incentives
8. Employer-sponsored programs to permit flexible work schedules;



# TCMs in the 1990 Clean Air Act

9. Trip-reduction ordinances
10. Traffic flow improvement programs
11. Vehicle use restrictions esp. during peak periods
12. Programs limiting portions of roads to non-motorized vehicular use or pedestrian use
13. Idling restriction
14. Cold-start emission restrictions;
15. Programs and restrictions to promote non-single occupant automobile travel as part of transportation planning and development efforts of a locality;
16. Voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks.

# Vehicle Travel Reduction Strategies

Travel Pricing Mechanisms: Road pricing, HOT Lanes, fuel pricing

Provision of Alternate Modes: Carpool, vanpool, transit, walk, bike park and ride lots, HOV lanes

Parking Management

Land Use Planning/Urban Form



# Urban Form and Driving

Strong relationship between the two

Study of 27 California nbhds. found that doubling residential density cut auto ownership by 16% & doubling transit service reduced VMT by an additional 5%

Toronto study showed that doubling density resulted in a 25% reduction in VMT per capita.

# Reduce Vehicle Travel

Strategy	Approach	Level of Implementation	Effectiveness	Timing
Transit	Infrastructure	Federal, State, Local	Medium	Mid-Term
Park and Ride lots	Infrastructure	Local	Limited	Near Term
HOT Lanes	Economic	Federal State, Local	High	Near Term
Parking Supply Limits	Regulation or Incentives	Local	High	Long-Term
Parking Cash Out	Economic	Federal, State, Local	High	Near Term
Road Pricing	Economic	State, Local	High	Near Term

# Reduce Vehicle Travel

Strategy	Approach	Level of Implementation	Effectiveness	Effect on Travel
Pedestrian	Infrastructure	Local	Medium	Mid-Term
Traffic Flow	Infrastructure	State, local	Low to Med.	Near-Term
Telework	Informationc	Employer Based	Low to Medium	Near-Term
Land Use	Regulation or Incentives	Local	High	Long-Term
Work Hours	Information	Employer Based	Supports Alt. Modes	Near-Term
Voluntary No-Drive	Information	Local	Low to Medium	Near-Term



# Transportation Demand Mgmt.

Based on national research of some 60 “successful” employer-based TDM programs, the average trip reduction was about 15% at the worksite.

While some programs reduced up to 50% of the vehicle trips coming to the site, more typical results are probably in the range of 2-5% trip reduction.

# Transportation Demand Mgmt.

Voluntary Mobile Source Emission  
Reduction Programs (VMEPs)

control measures, consisting of  
employer based commuter incentive  
programs, telecommuting and an area  
wide ridesharing program

# TDM - What Works Best?

Program that only provided information on commute options experience *no measurable reduction of trips*.

New travel options, such as vanpooling, reduced trips *by 8.5%*.

Financial incentives and disincentives reduced trips *by 16.4%*.

New services and financial incentives to use them *reduced 24.5% of trips*.

Research shows repeatedly that financial incentives (e.g., bus subsidies), disincentives (e.g., parking charges) and parking management (e.g., limiting parking supply) **are by far the most effective TDM strategies** for reducing vehicle trips.



# Effectiveness of Regional TDM

Comprehensive TDM strategies, including pricing and land use policy reforms and a shift of highway investment into transit can achieve regional mobile source emissions in typical non-attainment regions of over 2%+ annually.

# Effectiveness of TDM

TDM must encompass a broader range of strategies, including those dealing with non-work travel, non-peak period travel, short trips, emerging technologies, pricing, land use development, and urban design.

PROJECT AMOUNT	DESCRIPTION <b>1998 ARIZONA CMAQ</b>	VOC KG/Day	CO KG/Day	NOx KG/Day
\$993,972 Bike/Ped	Multi-Use Path Design, Walkways, bicycle underpass	<1	<1	<1
\$1,045,000 Demand Management	Trip Reduction Program and Capitol Rideshare	105	526	99
\$460,000 Shared Ride	Regional Rideshare	76	381	72

6 total projects: 1 ped/bike; 1 other; 1 shared ride; 1 traffic flow;  
1 transit; 1 tdm



PROJECT AMOUNT	DESCRIPTION <b>1998 CALIFORNIA CMAQ</b>	VOC KG/Day	CO KG/Day	NOx KG/Day
\$1,185,550 <b>Transit</b>	Western Riverside 3 Buses Operator Asst.	8	284	21
\$174,425 <b>Traffic Flow</b>	Grangeville Blvd & Rodgers Rd Install Actuated Traffic Signal	121	0	124
\$1,102,584 <b>Traffic Flow</b>	Sacramento County Branch Traffic Operations Center	18	0	3
\$374,083 <b>Ped/Bike</b>	Santa Barbara County Construct Class 2 Bikelane	0	1	0
\$31,870 <b>TDM</b>	Modesto Trip Reduction Program	7	63	6
\$403,000 <b>Shared Ride</b>	Ventura Co. Regional Rideshare.	15	0	21

<b>PROJECT AMOUNT</b>	<b>DESCRIPTION 1998 Colorado CMAQ Report</b>	<b>CO KG/Day</b>	<b>NOx KG/Day</b>
\$2,150,000 Traffic Flow	Traffic Signal Improvements	275	
\$260,000 Shared Ride	Colorado Sps Intermodal Transportation Center	527	
\$144,000 Shared Ride	Park and Ride Lot - Woodland Park	58	
\$28,367 Traffic Flow	Congestion Management - Colorado Springs	1567	
\$1,224,000 Shared Ride	Ride Arrangers TDM Denver Metro Area	1372	192
\$187,089 TDM	Fort Collins Local TDM	29	
\$127,000 Other	Cherry Creek TMO	14	2

PROJECT AMOUNT TYPE	DESCRIPTION 1998 CONNECTICUT CMAQ	VOC KG/Day	NOx KG/Day
\$360,000 Other	Telecommute Partnership	22	39
\$500,000 TDM	CONNDOT Commute Options	21	19
\$300,000 TDM	Metropool Commuter Incentive	21	19
\$1,333,856 Traffic Flow	RT 15 Upgrade Signal System	8	-1
\$311,660 Traffic Flow	US 1 Upgrade Signal System	3	0
\$666,000 Shared Ride	Rideshare Brokerage	61	136
\$350,000 Shared Ride	Rideshare Employee Services	61	136
\$496,000 Shared Ride	Rideshare Employee Services	61	136
\$400,000 Traffic Flow	Variable Message Signs	14	1

48 total: 11 TDM; 21 traffic flow; 7 shared ride; 7 transit and 2 other



# Putting It All Together

- No magic bullets: attainment will require a combination of traditional and non-traditional mutually supportive strategies.
- Analysis of individual measures shows less effectiveness than analysis of integrated packages
- Transportation pricing changes; growth management; pedestrian and bicycle programs; van and carpool programs; employer trip reduction programs; parking management; and, transit investments.